

Holography of information and the black-hole information paradox

Friday, 9 December 2022 16:00 (1h 30m)

We review recent progress in our understanding of how information is localized in a theory of quantum gravity. In such theories, we argue that, subject to weak assumptions, information in any bounded region is also available in its complement. This is very different from the manner in which quantum information is localized in nongravitational quantum field theories. This implies that the so-called split property fails in theories of quantum gravity. We show how this observation leads to the identification of an error in Hawking's argument for information loss and a resolution of some paradoxes about black holes.

References:

- 1) Lessons from the Information Paradox, Phys.Rept. 943 (2022), [arXiv:2012.05770]
- 2) Failure of the split property in gravity and the information paradox, Class.Quant.Grav. 39 (2022), [arXiv:2110.05470]

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